ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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March 29, 2005

Headquarters, Forces Command
Deputy Chief of Staff, G1
Attn: AFG1-BC (Victor Bonilla)
1777 Hardee Avenue, SW
Fort McPherson, Georgia 30330-1062

Re: Groundwater and Leachate Monitoring Plan
Landfills 6 and 7, For Environmental Restoration
Project, Fort Sheridan, IL

0970555001/Lake
Fort Sheridan (BRAC)
Superfund/Technical

Dear Mr. Bonilla:

The Illinois Environmental Protection Agency (Illinois EPA or Agency) is in receipt of the Groundwater and Leachate Monitoring Plan, Landfills 6 and 7 for Environmental Restoration Project, Fort Sheridan, Illinois. It was dated January 7, 2005 and received on January 12, 2005. The Monitoring Plan was provided for Agency review and comment. Illinois EPA has reviewed this document and is providing the following comments. However, it should be noted that this type of document is normally produced, reviewed, and approved after a Final Record of Decision (ROD) has been completed. Therefore, although the Agency is providing comments at this time, final concurrence on this document will not be granted until the ROD for Landfills 6 and 7 has been reviewed and commented upon, at a minimum, in order to ensure the two documents are in agreement.

1) **Executive Summary and Introduction** – The listed site ARARs should also include the following, as listed in the Interim Decision Document for Landfills 6 and 7:

35 IAC, Part 620, Groundwater
35 IAC Part 302, Water Quality
The Illinois Environmental Protection Act (415 ILCS 5/1). Specifically, Title III, Water Pollution, paragraphs 12a and 12d are general pollution prohibitions applicable to the Ft. Sheridan DOD OU sites.
35 IAC 807.313 Water Pollution

35 IAC 811.103 Surface Water Drainage
35 IAC 811.309 Leachate Treatment and Disposal

2) **Executive Summary, page vi** – In the first full paragraph it states, "...a minimum of one monitoring well will be designated as an upgradient well..." There need to be at least two monitoring wells in the upgradient direction in order to determine upgradient or background concentrations.

3) **Section 1.0, Introduction** – Another document that should have been referenced and included in the list provided is the *Decision Document for Interim Source Control Action for Landfills 6 and 7 at Fort Sheridan, Illinois*, dated April 22, 1997. The interim decision document provides a complete list of ARARs and states that the groundwater evaluation and monitoring program will meet those requirements.

4) **Section 2.0, Site Background** – In the second sentence of the fourth paragraph, the word "Operating" should be "Operable."

5) **Section 2.2, Remedial Systems** – In the first paragraph it states, "However, recent pumping studies show that groundwater and stormwater still infiltrate the RCP at a rate consistent with the pre-cap construction infiltration rate." This is inaccurate. According to the 100% Design Document for Landfills 6 and 7, the leachate flow rate was estimated at 8 gallons per minute from the landfills, 9 gallons per minute before the cap was placed. This calculates out to nearly 13,000 gallons per day, based upon the 9 gallons per minute value. The estimated leachate flow rate after cap completion and 8 years of leachate pumping was 5 gallons per minute. That calculates out to 7200 gallons per day. At the August 13, 2001 BCT meeting, leachate volume data for the first six months of 2001, pre-cap construction, were reported on a monthly basis. When added up, that 6-month data averaged approximately 7200 gallons per day, or 5 gallons per minute. The most recent leachate collection numbers (post-cap construction) reported to the Agency were approximately 1300 gallons per day, or less than 1 gallon per minute. This value is considerably less than the pre-cap construction infiltration rate. Is it the Army's intention that these 1300 gallons per day are now and have always been the sole and total result of groundwater and stormwater inflow and not from the decomposition of the landfill materials? This would assume that leachate generation from within the landfills has gone from approximately 6,000 gallons per day to 0 gallons per day over the last 3+ years. The Agency does not agree and has seen no data to verify this assumption. Please revise or remove the quoted statement from this plan.

6) **Section 4.3** – There is reference to Figure 5 and that it provides the shallow groundwater measurements in the till and the waste. This figure/map was not dated. To characterize potential seasonal and temporal, naturally and artificially induced, variations in

groundwater flow, seasonal potentiometric surface maps should be utilized for determination of groundwater flow as required by 35 IAC 811.315. Please include the preparation and reporting of such data.

7) **Section 4.3** – It is stated here that there is an inward gradient from the till groundwater into the landfills. This document should also provide justification that the inward gradient will remain throughout the entire post-closure period.

8) **Section 4.3** – The last sentence states, "In accordance with 35 IAC 620, the groundwater occurring in this formation was determined by the IEPA to be Class II: General Resource Groundwater." This statement should also state that determination was only applicable to a depth of 49 feet below ground surface. Please provide this clarification.

9) **Section 5.1** – See comment number 2 above regarding the minimum number of upgradient wells.

10) **Section 5.2.1** – An Illinois-Licensed Professional Geologist should supervise the monitoring well drilling activities.

11) **Section 5.2.1** – This section states the soil boring cuttings will not be containerized and will be spread out at each boring location. A plan for containerization should be provided concerning the encountering of potentially contaminated material.

12) **Section 5.2.3** – In addition to monitoring for pH, specific conductance, and temperature, dissolved oxygen, redox potential, and turbidity should also be monitored during development of the monitoring wells. See Field Procedure 5 in the Fort Sheridan Sampling and Analysis Plan (SAP). All of these field parameters should be determined to be stable prior to determining that a well is sufficiently developed. Stabilization of field parameters is achieved when all parameters are within the acceptable range for 3 successive readings made several (5-10) minutes apart. Acceptable ranges are:

- Ph ± 0.2 units
- Conductivity ± 3% of reading
- Dissolved oxygen ± 10% of reading
- Redox potential (ORP or Eh) ± 20 mV
- Turbidity ≤5 NTU or ± 10% of reading, whichever is greater
- Temperature ± 10% of reading

13) **Section 5.2.5** – As must be done for well construction, the required forms for well abandonment must also be completed and submitted to the proper Agencies. Please add this information.

14) **Section 5.3** – It states here that, "KEMRON'S Corporate Field Activity Standard Operating Procedures (SOPS) will be referenced for appropriate equipment and container decontamination and groundwater sampling." Illinois EPA suggests the Army follow the existing Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) for Fort Sheridan for the monitoring well installation, development, purging, sampling and analysis, and abandonment activities. The appropriate SOPs would also need to be added to the QAPP as well, if different than those already included therein.

15) **Section 5.3 and Subsequent Sections** – These sections should state that the field and laboratory work will comply with the approved Fort Sheridan QAPP and SAP, as amended.

16) **Section 5.3.2** – The proper equipment to obtain the additional parameters as listed in comment number 9 above should be included here as well.

17) **Section 5.3.3** – It states here that once per year the total depth of each monitoring well will be measured. Illinois regulation 35 IAC 811.318 states that *each time the groundwater is sampled*, the operator shall sample the depth of the well below ground. Please revise this section to comply with the cited regulation.

18) **Section 5.3.4** – The parameters to be measured in the field listed here should be consistent with those specified in comment number 9 above and the Fort Sheridan SAP.

19) **Section 5.3.5** – This section should be rewritten to be consistent with the procedures listed in the approved SAP.

20) **Section 5.3.5** – The first sentence mentions the use of dedicated pumps, non-dedicated pumps, and bailers for purging and sampling the monitoring wells. It is understood that this was written to allow some leeway in making such decisions, but it should be clearly stated that whichever method is chosen, it will be used for all monitoring wells and all subsequent sampling activities will follow the same method to ensure consistency of the acquired data from point to point. Utilization of differing sampling technologies may provide inconsistent results.

21) **Sections 5.3.6 and 5.3.7** – These sections should also be consistent with the approved SAP.

22) **Sections 5.3.7** – The last sentence discusses the method for correcting entry errors. The added initials should be accompanied by the date also. Please revise accordingly.

23) **Section 5.3.8** – It should be stated that sampling should not occur on a Thursday or Friday, unless it has been verified with the laboratory, in advance, that someone will be onsite to receive the samples when they arrive, potentially on the weekend.

24) **Section 5.4** – The last sentence states, "Maximum Allowable Predicted Concentrations (MAPCs) will be equal to AGQSs as a groundwater impact assessment will not be conducted for this site." Although the Agency understands that a complete groundwater impact assessment, as required in the regulations, cannot be performed for this site due to the age of the landfills, this document needs to provide the justification for not fulfilling this requirement.

25) **Section 5.4.1** – Data validation should be consistent with the approved Fort Sheridan QAPP. Also, please clarify what is meant by "data will not be rejected."

26) **Section 5.4.2** – This section proposes the AGQS values will be set at the 99% upper confidence limit for till wells and the 95% upper confidence limit for the Regional Sand Aquifer. A single statistical method for determination of upper confidence values should be utilized.

27) **Section 5.5.1** – Following the third bullet, the word "organic" should be removed. The quoted regulation does not make that distinction.

28) **Section 7.0** – The list of ARARs should also include those listed previously in comment number 1.

29) **Section 7.2** – The first sentence states leachate will be sampled on a semiannual basis for the first year. This should state leachate will be sampled on a *quarterly* basis for the first year and the resultant data combined with the most recent historical data to establish the groundwater and leachate analytical lists for the second phase of the project. (The typical program for a new landfill would require a minimum of 8 quarterly data collection efforts, before establishing those lists.) Please revise as noted.

30) **Section 7.2** – The second paragraph will need updating per the previous comment. Also, the word "routinely" should be removed from the last sentence of that paragraph. At this point in the monitoring program, any constituents currently or previously detected in the leachate will be required to be on the list. A request may be submitted at a later date, after sufficient information has been compiled, to reduce the list from the original, with the proper justification.

31) **Section 7.2** – In the second sentence of the third paragraph, it should state, "...semi-annually for the next *two* years..." rather than three. Please revise.

32) **Section 8.1** – At the end of the first paragraph, it should state that those programs could only be terminated after obtaining Illinois EPA approval.

33) **Section 8.1** – Is the date of August 2007 the proper date for the five-year review? Regardless, the earliest date for requesting a reduction or termination of the groundwater and leachate monitoring programs would not fall on that date. The agreed upon initial groundwater and leachate monitoring sequence was quarterly for one year, semi-annually for two years, and annually for two years. Since that monitoring has not yet begun, the earliest date for completing this initial monitoring would be at least 2010, would it not? Illinois EPA agreed that at the end of that first five years of monitoring, a request could be made to reduce or terminate the program. It was not agreed that such a request could come after only two years of monitoring or as stated here, "after the third round of groundwater sampling." Please revise this section to accurately specify the date that such a request may be made. It should be noted that according to this plan, the first stage of the program does not even collect groundwater samples, so the actual date to make that request will be even further out than 2010.

34) **Section 8.1** – The procedures outlined in this section are a logical step towards establishing an endpoint for leachate monitoring and collection. However, as per the requirements of 35 IAC 811.309(h)(2), treatment is no longer necessary if the leachate constituents do not exceed the wastewater effluent standards in 304.124, 304.125, and 304.126, and do not contain a five day biochemical oxygen demand concentration greater than 30 mg/l for six consecutive months. The leachate will also have to comply with these standards in order to reach an endpoint. This comment was made previously in Illinois EPA's comment letter dated August 21, 2001 regarding the 60% Design Document for the Interim Remedial Action at landfills 6 and 7. Additionally, compliance with the 35 IAC 620 groundwater regulations, which are noted as being ARAR in the Interim Decision Document and comment number 1 above, will have to be documented.

35) **Section 8.2** – One other thing to consider is the effect on the east slope of a build-up of leachate or groundwater within the landfill. The engineering aspects of the cap design must also be taken into account. A full engineering analysis will be required calculating the slope stability, seismic factor of safety, etc... using the most conservative input values. This should be discussed here as well.

36) **Section 8.2** – This section discusses a conceptual plan for phase-out of the leachate collection system. It should be stated here that the proposed phase-out plan, consisting of turning off the leachate collection system and monitoring of the groundwater to ensure no impacts are occurring, may not be put into effect without proper notice to and approval by Illinois EPA prior to initiation of that program. Illinois EPA must also concur that the

chemical makeup of the leachate is not statistically different from the local groundwater before agreeing to such a program.

37) **Table 1** – There are some parameters and compounds of concern that have been left off the table, which should be included. The following parameters were not included: Bacteria (Fecal Coliform) (n/a), Biochemical Oxygen Demand (BOD_5) (n/a), 1-Propanol (1000 ug/L), 2-Propanol (Isopropyl Alcohol) (1000 ug/L), Aldicarb (2 ug/L), Bis(Chloromethyl)Ether (10 ug/L), Butanol (50 ug/L), Carbofuran (10 ug/L), Nitrate-Nitrogen (1 mg/L), Polychlorinated Biphenyls (0.5 ug/L), Tetrachlorodibenzo-p-Dioxins (0.005 ug/L), and p-Cresol (5 ug/L). In addition, it is noted that the document proposes testing of Xylenes (total); whereas, the Permit Section of Illinois EPA normally requires testing of Xylene () in addition to m-Xylene (), o-Xylene (), and p-Xylene (). Please add these parameters to the list. (The number in parentheses is the PQL for the preceding parameter and n/a stands for not available.)

38) **General** – The font size of the text appears to change sporadically throughout the document. This document should be reviewed for this and revised as necessary.

If you have any questions regarding this correspondence, you may contact me at 217/557-8155 or via e-mail at Brian.Conrath@epa.state.il.us.

Sincerely,

Brian A. Conrath

Brian A. Conrath
Remedial Project Manager
Federal Facilities Unit
Federal Site Remediation Section
Bureau of Land

BAC:bl:RAC:H:\fortsh\GWLMPrvw

cc: Owen Thompson, USEPA (SR-6J)
Mark Shultz, US Navy - EFA Midwest
Kurt Thomsen, Fort Sheridan EC
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